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In order to simplify the evaluation of the detected signals even further, according to one advantageous embodiment, in particular, for detecting cardiomagnetic fields, a movable table for positioning an object to be examined relative to the pickup coil(s) is provided. It was found that the noise at one and the same location in a space over the course of the typical measuring intervals is relatively uniform while already a few centimeters away from it a noise can be measured that is also uniform but, with respect to its structure, is considerably different. When the measurements are carried out only at one or a few locations, the filter adjustments can stay the same for different parts of the object measured sequentially at the respective location. As an example, it was found to be expedient to measure cardiomagnetic fields at, for example, 36 points of a rectangular grid with, for example, 4 cm spacing, respectively, to the neighboring points. If these 36 points were measured with a single channel system (with only one antenna and one SQUID) and if the antenna for this purpose were moved instead of the object to be examined, the recorded 36 measurement series would have to be filtered with individual new adjustments. If instead the object to be examined is moved and the antenna remains stationary, the filters must be adjusted only once.

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Fig. 9 shows the characteristic lines of a SQUID according to the invention wherein the line 1 shows the dependency of the feedback loop amplification coefficient G for an open negative feedback and the line 2 the dependency of the slew rate (SR) as a function of the frequency of the measured signal; and

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The antenna 5 forms with its windings 8, 9, and 10 a second-order gradiometer 2 which detects the component d2B/dz2, i.e., the diagonal component of the magnetic gradient sensor. The gradiometer is comprised in the illustrated embodiment of a wire of 50 μm diameter that is wound about a Textolite cylinder having a 24 mm diameter, wherein the baseline is 60 mm. The reference coil 8 and the pickup coil 10 are comprised of a single winding while the central reference coil 9 has two windings.

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Fig. 7 is a basic schematic of a Dewar container 44 and of the antenna 10 and SQUID 24 comprised of a gradiometer and electronic measuring device 46 arranged in a magnetically shielded housing 42. The housing 42 is comprised expediently of two plastic material shells 42a and 42b, wherein the upper shell 42a can be easily removed so that, if needed, cooling medium, in particular, liquid helium can be filled into the Dewar container.